

P a t e n t c l a i m s

1.

A footrest platform device for use in apparatus for physical exercise, preventive
5 exercise and rehabilitation, characterised in

- that the platform is limitedly tiltable to both sides transverse to the longitudinal axis of the platform, and that the platform's degree of tiltability is stepwise or steplessly adjustable through the use of an, optionally lockable, adjusting mechanism. (Figs. 1-6 and Figs. 27, 28)

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2.

A device as disclosed in claim 1, characterised in

- that the adjusting mechanism consists of a spring bit surrounded by a spring tightener device movable along the bit, and that the spring tightener is in
15 movable engagement with a threaded rod which at one end thereof is fastened to a means for causing a rotational movement of the threaded rod.

3.

A device as disclosed in claim 2, characterised in

- 20 - that said means is an electrically controllable motor.

4.

A platform device as disclosed in claim 3, characterised in

- that the platform is set in a fixed, neutral position when the apparatus is not in
25 use.

5.

A device as disclosed in claim 1, 2 or 3, characterised in

- that the platform has a fastening device that is movable and lockable in different
30 positions along the length of an upwardly and downwardly movable bar on the apparatus.

6.

A device as disclosed in claim 1, 2, 3 or 4, characterised in

- 35 - that the platform is tiltably supported on a platform frame or a pair of platform carriages.

7.

A device as disclosed in claim 1, 2 or 3, characterised in

- that each platform is mountable on an upwardly and downwardly movable bar on the apparatus, said bar being designed to be tiltable to both sides transverse to an axis that extends along the longitudinal axis of the bar.

8.

A device as disclosed in one or more of claims 1-5, characterised in

- that the adjusting mechanism consists of a wheel having an elliptical or progressive circumference, where the outer circumference of the wheel exerts pressure on a cylinder that moves a spring towards a movable part having at the opposite end a V-shaped piece that enters a V-shape in another part that is fastened to the underside of the platform. (Fig. 7)

9.

A device as disclosed in claim 8, characterised in

- that the wheel is level with the axis of rotation of the platform and between the underside of the tiltable platform and the platform frame on which the platform is tiltable supported.

10.

A device as disclosed in claim, characterised in

- that between the platform and the frame there are arranged replaceable or adjustable, preferably elastically yielding, elements that determine the degree of movement of the platform. (Fig. 8)

11.

A device as disclosed in claim 6 or 7, characterised in

- that said movement is dependent upon the vertical movement of the bar.

12.

A physical exercise apparatus equipped with upwardly and downwardly movable bars on which are mounted footrest platforms and having grip poles and grip handles that are fixed or movable as part of an exercise, characterised in

- that the platforms are tiltable to both sides transverse to an axis that extends along the length of the bar. (Figs. 9-12)

13.

An apparatus as disclosed in claim 12, characterised in

- that the platforms each have a tilting mechanism that is steplessly or stepwise adjustable from a locked position to a tilting function state.

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14.

An apparatus as disclosed in claim 12, characterised in

- that the platforms have a means for engagement with a guide track and/or articulated arms that are fastened to the frame of the fitness apparatus, whereby the platform is caused to be slidably guidable along the bars, and that the movement is a function of the vertical movement of the bars.

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15.

An apparatus as disclosed in claim 14, characterised in

- that said poles or handles are movably fastened to the fitness apparatus frame and are articulatedly connected to the bars of the apparatus so that the movement of the poles or handles at least partly follows the movement of the bars.

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16.

An apparatus as disclosed in claim 14 or 15, characterised in

- that the poles or handles are in addition limitedly movable transverse to their primary movement.

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17.

An apparatus as disclosed in claims 12-16, characterised in

- that the upward and downward movement of the bars has adjustable resistance to movement.

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18.

An apparatus as disclosed in claim 12, characterised in

- that guide tracks are secured to an upright frame part between the platforms, and that the tracks have a curved shape which causes the sliding movement of the platforms along said bars on vertical force actuation of said platforms and bars.
- (Fig. 11)

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19.

An apparatus as disclosed in one or more of claims 12-18, characterised in

- that the bars are connected to a tilting device that controls the mutually opposite vertical direction of travel of the bars. (Fig. 12)

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20.

An apparatus as disclosed in claim 19, characterised in

- in that the tilting device is mounted in the frame between the bars and has length-adjustable articulated arms connected to the bars.

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21.

An apparatus as disclosed in claim 19 or 20, characterised in

- that the tilting device has a means for adjustable tilt resistance.

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22.

An apparatus as disclosed in one or more of claims 12-21, characterised in

- that the bars are connected to motion dampers.

23.

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An apparatus as disclosed in claim 12, characterised in

- that each bar is of a spring material and consists of a forward and a rear part which respectively are connected to a forward and a rear part of the platform. (Fig. 13)

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24.

An apparatus as disclosed in claim 23, characterised in

- that the said forward and rear parts are each constructed telescopically, and that the telescopic extent of each part is adjustable for regulating its elasticity.

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25.

An apparatus as disclosed in claim 12, characterised in

- that the rear end of the bars is connected to a crank and a rotating wheel, that the platforms run on tracks in the bars, and that articulated arms are connected to the fitness apparatus frame and bars, said articulated arms being designed to pull and push the platforms along the bars when the crank and rotating wheel are set in motion. (Fig. 14)

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26.

A physical exercise apparatus as disclosed in claim 13, characterised in

- that the articulated arms that are connected to the platforms are length-adjustable for adjusting the platforms' extent of movement along the bars.

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27.

A physical exercise apparatus equipped with upwardly and downwardly movable bars, and having footrest platforms mounted thereon, and with grip poles or grip handles that are fixed or movable as part of an exercise, characterised in

- 10 - that each bar at its rear end is pivotally connected to a rotating wheel or crank, that at the other end the bars are connected to articulated arms that cause a see-saw movement of the bars, and that the platforms are tiltable to both sides transverse to an axis that extends along the longitudinal axis of the bars. (Figs. 15-18)

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28.

An apparatus as disclosed in claim 12 or 27, characterised in

- that the platforms are slidable along the length of the bars, that vertical forces which are applied to the bars cause the platforms to describe a circular movement path relative to the apparatus frame, and that articulated arms connected to the frame and the platforms move the platforms in a sliding movement along the bars.

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29.

25 An apparatus as disclosed in claim 28, characterised in

- that the platforms are slidably movable along the bars in tracks, and that the tracks have one or a combination of at least two of the following shapes:
 - o linear path
 - o curved path
 - 30 o path with several curves
 - o convex path
 - o concave path
 - o convex and concave path.

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35 30.

An apparatus as disclosed in claim 29, characterised in

- that the apparatus poles have their tilt axis adjustably arranged on the apparatus frame for adjustability of the extent of tilt of the poles or handles.

31.

5 An apparatus as disclosed in claims NEW, 25, 27, 28 or 29, characterised in

- that the step length of the platform is by means of an adjusting device adjustable as a function of the rotational speed of the rotating wheel.
(Figs. 19-20)

10 32.

An apparatus as disclosed in one or more of claims 12-14, 18-22 and 25-29, characterised in

- that the nominal step length of the platform is adjustable by an apparatus user, and that the adjustment of the step length takes place automatically with the aid
15 of an adjusting mechanism connected to articulated arms for control of the sliding function of the platform.

33.

An apparatus as disclosed in claim 31 or 32, characterised in

- 20 - that the adjusting mechanism consists of a carriage to which articulated arms are fastened, that the carriage is movable along a track upon rotation of a connected threaded rod, and that the rotation of the threaded rod is operated by a motor, the position of the carriage along the track determining the step length of the platforms.

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34.

An apparatus as disclosed in claim 31 or 32, characterised in

- that the adjusting device consists of a carriage to which articulated arms are fastened, that the carriage is movable along a track, and that the positioning of
30 the carriage along the track is adjustable by means of a hydraulically controllable device.

35.

An apparatus as disclosed in claim 12, 25, 26, 27 or 28, characterised in

- 35 - that said poles or handles have at least one portion thereof running in curved tracks for giving, when the fitness apparatus is in use, said poles or handles a curved movement towards and away from the apparatus user, and that the

movement of said poles or handles is a function of the sliding movement of the platforms. (Figs. 21, 22)

36.

5 An apparatus as disclosed in claim 35, characterised in

- that the sliding movement of the platforms is transmitted via two sets of articulated arms which at their respective ends run in tracks on the frame to wire guides that are connected to further articulated arms which at an end thereof run in tracks, and where these articulated arms are connected to said poles or
- 10 handles. (Fig. 21)

37.

An apparatus as disclosed in one of claims 12, 15, 16, 27-31, 35 and 36, characterised in

- that each of the poles or handles consists of two telescopically cooperating parts,
- 15 and that the length of the pole or handle is designed to vary as a result of the sliding movement of the platform along the bars. (Fig. 22)

38.

An apparatus as disclosed in claim 37, characterised in

- that an upper part of the two telescopic parts in sliding engagement with a track that is fixed to the frame, that the movement of the apparatus bars upwards and downwards is designed to transmit movement to the poles or the handles, a grip piece on said upper part being designed to slide in said track, whereby the pole or the handle is given varying length as a result of its movement in the track.
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39.

An apparatus as disclosed in one of claims 12-15, characterised in

- that on the underside between each bar and frame there is mounted a cylinder damper that acts against the downward vertical movement of the bars, that the
- 30 movement of the bars is controlled by a rod mounted on the apparatus frame transverse to the longitudinal direction of the bars at a point in association with the tilt point of the bars, that when the rod at a first end position thereof and about a pivot point thereon is pushed in one direction by a first link on one of the bars, the rod will turn so that the other bar moves in the opposite direction of the
- 35 first bar, a link on the second bar being in engagement with a second end of the rod. (Figs. 23, 24)

40.

An apparatus as disclosed in claim 39, characterised in

- that the link on the bar is articulatedly connected to a lower portion of the associated pole or handle, so that downward movement of a bar with attached platform causes forward movement of the associated pole or handle, and so that upward movement of a bar with attached platform causes backward movement of the associated pole or handle.

41.

An apparatus as disclosed in one of claims 12-15, 17, 18, 22, 25 and 27-29, characterised in

- that the driving wheel in cooperation with a flywheel that can be equipped with a motion braking device. (Figs. 25a, 27a)

42.

An apparatus as disclosed in one of claims 12-15, 17, 18, 22, 25, 27-29 and 40, characterised in

- that each of said poles or handles is pivotally supported on an upright portion of the apparatus frame and at a lower portion pivotally supported on a forward portion of the respective bars; and
- that the platform movable along the bar is connected to a pair of articulated arms, wherein a first of the articulated arms between its ends it pivotally supported at said forward portion of the bar, at an upper end is designed to run in a guide in said upright portion and at its lower end is articulatedly connected to a first end of the second articulated arm, a second end of the second articulated arm being articulatedly connected to said platform. (Fig. 25a and Fig. 26).